

CLAIMS:

1. An arc discharge metal halide lamp for use in selected lighting fixtures, said lamp comprising:

a discharge chamber having light permeable walls of a selected shape bounding a discharge region of a selected volume including therein a pair of end region wall portions through each of which a corresponding one of a pair of electrodes are supported to have interior ends thereof positioned in said discharge region so that they are separated from one another by a separation length, said walls having portions thereof as sides between said end wall portions with corresponding effective joined inner diameters at each of said end wall portions and with an effective operation inner diameter over said separation length in directions substantially perpendicular to said separation length such that a ratio of said separation length to said effective operation inner diameter is greater than two and with lengths of said wall sides between said end wall portions being greater than said effective operation inner diameter, said end wall portions having inner surfaces so that intersections thereof with planes containing centers of said electrodes are smooth and have radii of curvature therealong equal to or less than half of that said corresponding effective joined inner diameter and so that they are separated from said interior ends of said electrodes by more than one millimeter; and ionizable materials provided in said discharge region of said discharge chamber.

2. The device of claim 1 wherein said discharge chamber is formed of walls comprising polycrystalline alumina.
3. The device of claim 1 wherein said ratio of said separation length to said effective operation inner diameter is less than five.
4. The device of claim 1 wherein said ratio of said separation length to said effective operation inner diameter is greater than three but less than five.
5. The device of claim 1 wherein said ratio of said separation length to said effective operation inner diameter is greater than four but less than five.
6. The device of claim 1 wherein said ratio of said separation length to said effective operation inner diameter is greater than five.
7. The device of claim 1 wherein said ionizable materials include metal halides.
8. The device of claim 7 wherein said ionizable materials include CeI_3 .
9. The device of claim 7 wherein said ionizable materials include PrI_3 .
10. The device of claim 8 wherein said ionizable materials further include NaI .
11. The device of claim 9 wherein said ionizable materials further include NaI .

12. An arc discharge metal halide lamp for use in selected lighting fixtures, said lamp comprising:

a discharge chamber having light permeable walls of a selected shape bounding a discharge region of a selected volume including therein a pair of hemispherical shape end region wall portions through each of which a corresponding one of a pair of electrodes are supported to have interior ends thereof positioned in said discharge region so that they are separated from one another by a separation length, said walls having portions thereof as sides between said end wall portions with an interior surface forming a truncated right cylinder having an inner diameter over said separation length in directions substantially perpendicular to said separation length such that a ratio of said separation length to said inner diameter is greater than two and with lengths of said wall sides between said end wall portions being greater than said inner diameter, said end wall portions each having inner surfaces having a radius equal to half of said inner diameter which are separated from said interior ends of said electrodes by more than one millimeter; and ionizable materials provided in said discharge region of said discharge chamber.

13. The device of claim 12 wherein said discharge chamber is formed of walls comprising polycrystalline alumina.

14. The device of claim 12 wherein said ratio of said separation length to said effective operation inner diameter is less than five.

15. The device of claim 12 wherein said ratio of said separation length to said effective operation inner diameter is greater than three but less than five.
16. The device of claim 12 wherein said ratio of said separation length to said effective operation inner diameter is greater than four but less than five.
17. The device of claim 12 wherein said ratio of said separation length to said effective operation inner diameter is greater than five.
18. The device of claim 12 wherein said ionizable materials include metal halides.
19. The device of claim 18 wherein said ionizable materials include CeI_3 .
20. The device of claim 18 wherein said ionizable materials include PrI_3 .
21. The device of claim 19 wherein said ionizable materials further include NaI .
22. The device of claim 20 wherein said ionizable materials further include NaI .